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EXAMINER

MOORE, JAMES K

ART UNIT

PAPER NUMBER

2682

DATE MAILED: 03/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/595,557

Applicant(s)

DIXON, ROBERT C.

Examiner

James K Moore

Art Unit

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-20 is/are allowed.
- 6) ☒ Claim(s) 1-3,5,7-11,21 and 23 is/are rejected.
- 7) ☒ Claim(s) 4,6,22,24 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 11 is objected to because of the following informalities: "is adjacent to another member of said first class of cells" should be inserted following "wherein no member of said first class of cells". Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1, 2, 5, 21, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Schmidt (U.S. Patent No. 4,765,753).

Regarding claim 1, Schmidt discloses a wireless communication system comprising a pattern of cells, a base station, and user stations. The base and the user stations communicate using TDMA. The base station is assigned a first transmission frequency (a broadband frequency) for transmitting to a first cell. The first transmission frequency is not assigned to any base station in a cell adjacent to the first cell. Each user station in the first cell is assigned a second transmission frequency (a narrow-band frequency) for transmitting to the base station of the first cell. The second transmission frequency is not assigned to any user station in any cell adjacent to the first cell. See col. 1, line 35 through col. 3, line 8.

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Regarding claim 2, Schmidt discloses all of the limitations of claim 1. In addition, Schmidt's first transmission frequency is inherently from a first set comprised of a limited first predetermined number of frequencies (the frequency bands allocated by the FCC). Schmidt also discloses that the second transmission frequency is from a second set comprised of a limited second predetermined number of frequencies (the frequencies of the set of channels allocated to the first cell). See col. 2, lines 49-59. The first cell of frequencies is different than the second set of frequencies.

Regarding claim 5, Schmidt discloses all of the limitations of claim 1, and also discloses that the user stations are dynamically assigned the second transmission frequency. See col. 2, lines 53-59.

Regarding claim 21, Schmidt discloses a multiple user wireless communication system comprising a plurality of cells and a base station located in each cell. Transmitters in a first cell are assigned a first code for modulating radio communication in the first cell and radio signals in the first cell are spread across a bandwidth sufficiently wide that receivers in a second cell adjacent to the first cell may distinguish communication which originates in the first cell from communication which originates in the second cell. The first cell is not adjacent to any other cell using a first code (code-division multiplexing the cells). See col. 2, lines 26-48. The base station transmits over a first frequency (broadband) and the user station in communication with the base station transmit over a second frequency (narrowband) different from the first frequency. See col. 2, line 49 through col. 3, line 8.

Regarding claim 23, Schmidt discloses a wireless communication system comprising a plurality of cells, a base station, and user stations. The base station is assigned a first transmission frequency (a broadband frequency) for transmitting to a first cell. The first transmission frequency is not assigned to any base station in a cell adjacent to the first cell. Each user station in the first cell is assigned a second transmission frequency (a narrow-band frequency) for transmitting to the base station of the first cell. The second transmission frequency is not assigned to any user station in any cell adjacent to the first cell. The base station and user stations are assigned codes for modulating radio communication for the cell. See col. 1, line 35 through col. 3, line 8.

4. Claims 7-10 are rejected under 35 U.S.C. 102(e) as being anticipated by D'Amico et al. (U.S. Patent No. 5,127,100).

Regarding claim 7, D'Amico discloses a wireless communication system comprising a pattern of cells, base stations, and user stations. See col. 2, lines 25-38. The base stations and user stations communicate using TDMA. See col. 2, line 55 through col. 3, line 4. A base station which transmits to a cell is assigned a transmission frequency which is not assigned to any base station in an adjacent cell. See col. 3, lines 22-48. Each user station in the cell is assigned the transmission frequency for transmitting to the base station and the communication between the base station and the user stations are time division duplexed. See col. 2, line 55 through col. 3, line 4.

Regarding claim 8, D'Amico discloses all of the limitations of claim 7, and it is inherent that a user station in the cell transmits data communication messages which include station identification information when the user station originates a telephone call.

Regarding claims 9 and 10, D'Amico discloses all of the limitations of claim 7 and also discloses that the transmission frequency is dynamically assigned. See col. 3, lines 22-48.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goldman (U.S. Patent No. 4,129,749) in view of Schmidt.

Regarding claim 3, Goldman discloses a wireless communication system comprising a base station (10) and user stations (12). The base and user stations communicate using time division multiplexing. The base station is assigned a first transmission frequency (F1) for transmitting to the user stations and each user station is assigned a second transmission frequency (F2) for transmitting to the base station. See Figure 1 and col. 2, line 43 through col. 3, line 2. Goldman does not disclose: that the wireless communication system comprises a pattern of cells; that the transmission frequency of the base station is not assigned to any adjacent base stations; that the

transmission frequency of the user stations is not assigned to any other user stations in adjacent cells; that the first transmission frequency is from a first set comprised of three frequencies; or that the second transmission frequency is from a second set comprised of three frequencies.

However, Schmidt teaches a wireless communication system comprising a pattern of cells which reduces co-channel interference among the cells by separating the set of message channels assigned to each base station such that no two adjacent cells use the same band of frequencies. See col.1, lines 35-50 and col. 2, lines 26-48. Three frequency bands are re-used in the pattern of cells. See Figure 1. It is apparent to one of skill in the art by examining Figure 1 that three is the lowest number that is required to ensure that no two adjacent cells use the same frequency bands. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Goldman with Schmidt, such that the transmission frequencies of the base station and user stations are not used in adjacent cells, in order to reduce co-channel interference. It would have also been obvious to one of ordinary skill in the art at the time of the invention to further modify Goldman with Schmidt, such that number of frequency bands re-used by base stations and user stations in a pattern of cells is three, in order to maximize the user capacity of each cell in the wireless communication system.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over D'Amico in view of Schmidt.

Regarding claim 11, D'Amico discloses all of the limitations of claim 7, and all discloses that the pattern of cells may comprise a repeated pattern of cells (frequency reuse). See col. 3, lines 22-32. D'Amico does not disclose that the repeated pattern consists of three classes of cells, wherein no member of a class of cells is adjacent to a cell which is a member of the same class.

However, Schmidt teaches a wireless communication system comprising a pattern of cells which reduces co-channel interference among the cells by separating the set of message channels assigned to each base station such that no two adjacent cells use the same band of frequencies. See col.1, lines 35-50 and col. 2, lines 26-48. Three classes (frequency bands) are re-used in the pattern of cells. See Figure 1. It is apparent to one of skill in the art by examining Figure 1 that three is the lowest number that is required to ensure that no two adjacent cells use the same frequency bands. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify D'Amico with Schmidt, such that that the repeated pattern consists of three classes of cells, wherein no member of a class of cells is adjacent to a cell which is a member of the same class, in order to maximize the user capacity of each cell in the wireless communication system.

Response to Arguments

8. Applicant's arguments filed January 30, 2003 have been fully considered but they are not persuasive.

In regards to claims 1-3, 5, 21, and 23, the applicant argues that Schmidt does not disclose that the first transmission frequency is not assigned to any base station in an adjacent cell, and that the second transmission frequency is not assigned to any user station in an adjacent cell. See page 16 of the Response to Office Action. However, the examiner disagrees because Schmidt states, in col. 2, lines 26-35: "Separating the message channels from adjacent base stations is effected either by using the frequency-division multiplex method (different RF-carriers for the set of channels used in these base station) or by using the code-division multiplex method... The same channel set (RF-carrier and/or code word set) can be repeated in a further radio cell when spaced sufficiently apart."

Regarding claims 7-11, the applicant argues that D'Amico does not disclose a pattern of cells. See page 17 of the Response to Office Action. However, the examiner disagrees. D'Amico discloses, in col. 3, lines 21-30, a plurality of cells that may utilize different frequencies to avoid interference between cells. D'Amico also discloses, in col. 3, lines 31-33, that the frequencies may be reused in remote cells. Therefore, it is inherent that the frequencies must be distributed among the cells in the wireless system by way of a pattern by which no two adjacent cells share the same frequency.

Allowable Subject Matter

9. Claims 4, 6, 22, 24, and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 12-20 are allowed.

11. The following is a statement of reasons for the indication of allowable subject matter:

The present invention is directed to a wireless communication system. The system comprises a base station that is assigned a first transmission frequency for transmitting to a first cell, and user stations.

Claim 4 identifies the uniquely distinct feature "wherein said base station is dynamically assigned said first transmission frequency."

Claim 6 identifies the uniquely distinct feature "wherein transmissions between said base station transmitting to said first cell and the user stations in said first cell are time division duplexed."

The closest prior art, Schmidt, discloses a wireless communication system. The system comprises a base station that is assigned a first transmission frequency for transmitting to a first cell, and user stations. However, Schmidt fails to anticipate or render the above underlined limitations obvious.

The present invention is also directed to a second embodiment of the wireless communication system. The system comprises a base station and user stations. The base station is assigned a first transmission frequency for transmitting to a first cell, and a first spread spectrum code for modulating radio communication for the first cell.

Claim 12 identifies the uniquely distinct feature "wherein said user stations in said first cell are each assigned a second spread spectrum code for modulating radio communication from said first cell."

The closest prior art, Schmidt, discloses a wireless communication system. The system comprises a base station and user stations. The base station is assigned a first transmission frequency for transmitting to a first cell, and a first spread spectrum code for modulating radio communication for the first cell. However, Schmidt fails to anticipate or render the above underlined limitations obvious.

Claims 13-20 depend on claim 12.

The present invention is also directed to a third embodiment of a wireless communication system. The system comprises a plurality of cells, and a base station located in each cell. The base station transmits over a first frequency. User stations in communication with the base station transmit over a second frequency different from the first frequency.

Claim 22 identifies the uniquely distinct feature "wherein said base station communicates with said user stations using time division duplexing."

The closest prior art, Schmidt, discloses a wireless communication system. The system comprises a plurality of cells, and a base station located in each cell. The base station transmits over a first frequency. User stations in communication with the base station transmit over a second frequency different from the first frequency. However, Schmidt fails to anticipate or render the above underlined limitations obvious.

The present invention is also directed to a fourth embodiment of a wireless communication system. The system comprises a base station, and a plurality of user stations. The base station is assigned a first transmission frequency for transmitting to a first cell. User stations in the first cell are assigned a second transmission frequency. The base station and the user stations in the first cell are assigned one or more distinct codes for modulating radio communication for the first cell.

Claim 24 identifies the uniquely distinct feature "wherein said user stations in said first cell are assigned a second set of one or more distinct spreading codes."

Claim 25 identifies the uniquely distinct feature "wherein said base station communicates with said user stations using time division duplexing."

The closest prior art, Schmidt, discloses a wireless communication system. The system comprises a base station, and a plurality of user stations. The base station is assigned a first transmission frequency for transmitting to a first cell. User stations in the first cell are assigned a second transmission frequency. The base station and the user stations in the first cell are assigned one or more distinct codes for modulating radio communication for the first cell. However, Schmidt fails to anticipate or render the above underlined limitations obvious.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ken Moore, whose telephone number is (703) 308-6042. The examiner can normally be reached on Monday-Friday from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached at (703) 308-6739.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Ken Moore

JKM

3/3/03



VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600